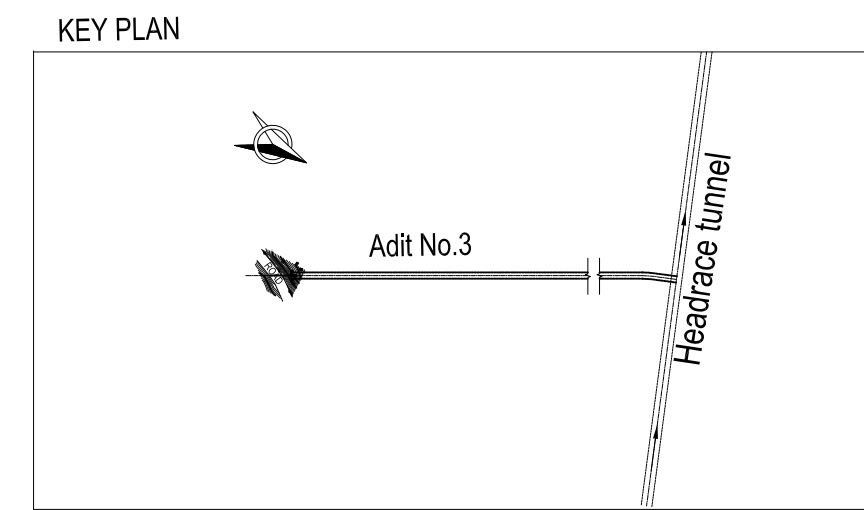
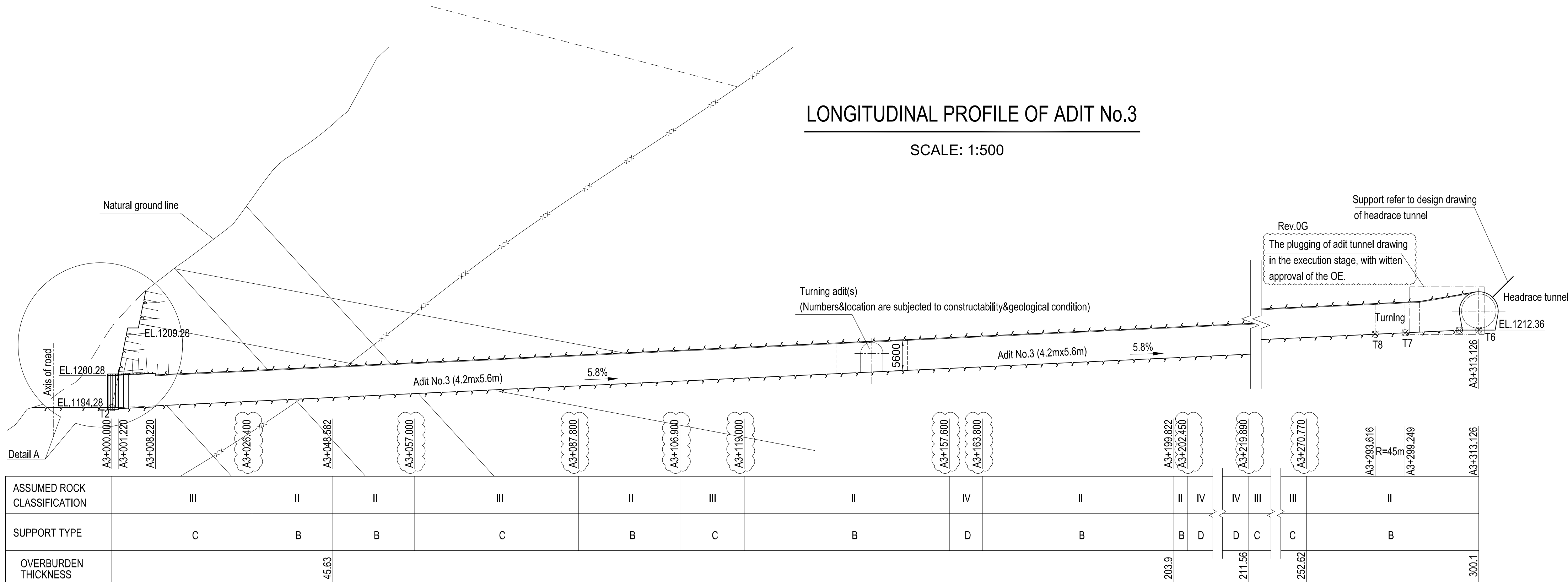


SCALE: 1:500



SCALE: 1:500



### Legend

Joint sets of adit No.3

### Control points

1:500 0 5 10 15 20 25m

NOTE

1. The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
2. These rock classes and length estimates in drawings are purely speculative, and all rock classes may be encountered.

## REFERENCE DRAWINGS

UTI-C-150-CVL-DG-43002	Surrounding Rock Stability Calculation of Adit NO.3
UTI-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UTI-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UTI-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

SYMBOL AND LEGEND

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PROJECT TITLE

Upper Trishuli-1 HEP (216MW)

OWNER



OWNER'S ENGINEER



CONTRACTOR

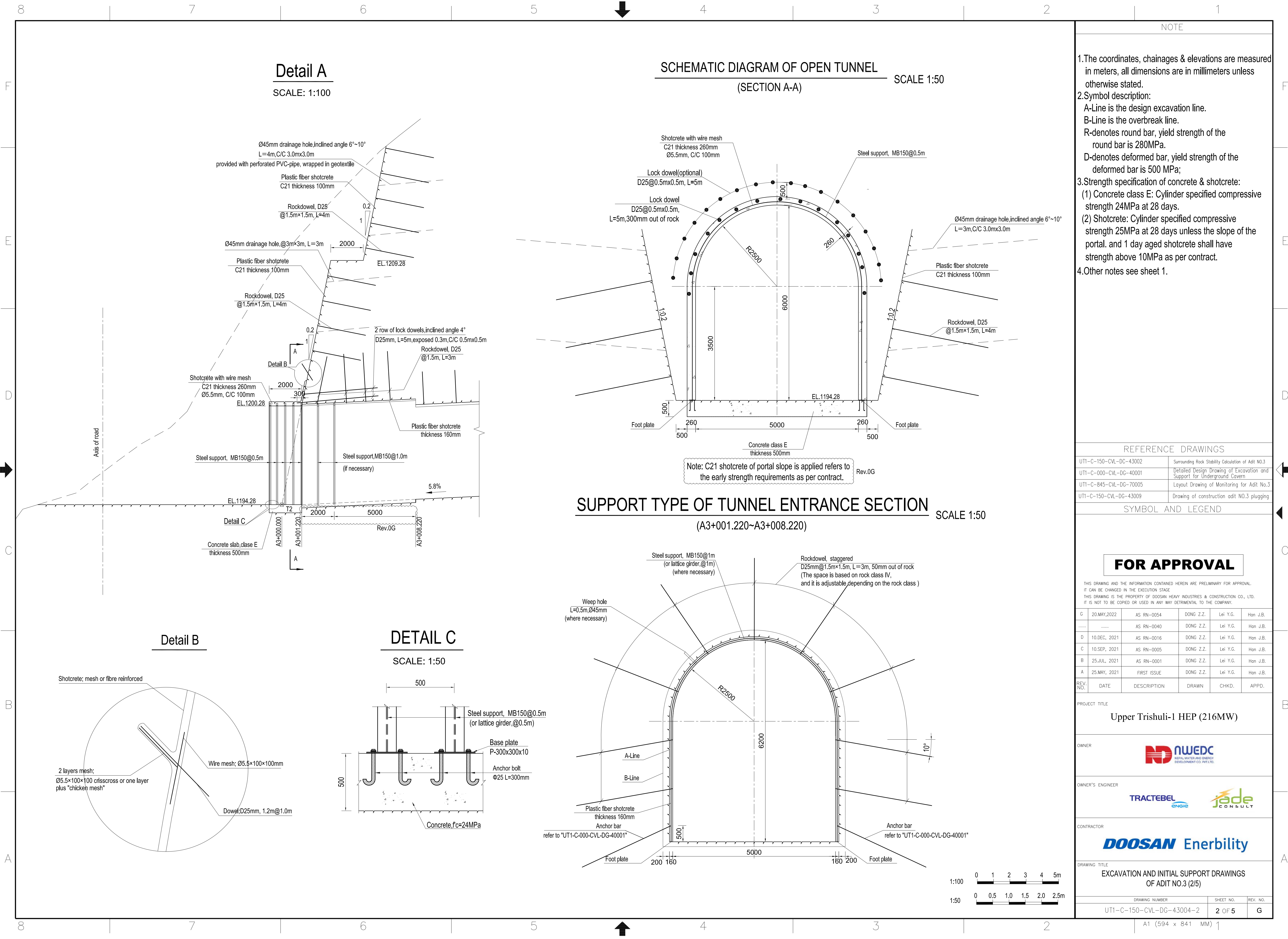
**DOOSAN** Enerbility

DRAWING TITLE

EXCAVATION AND INITIAL SUPPORT DRAWINGS  
OF ADIT NO.3 (1/5)

DRAWING NUMBER	SHEET NO.	REV. NO.
UT1-C-150-CVL-DG-43004-1	1 OF 5	G

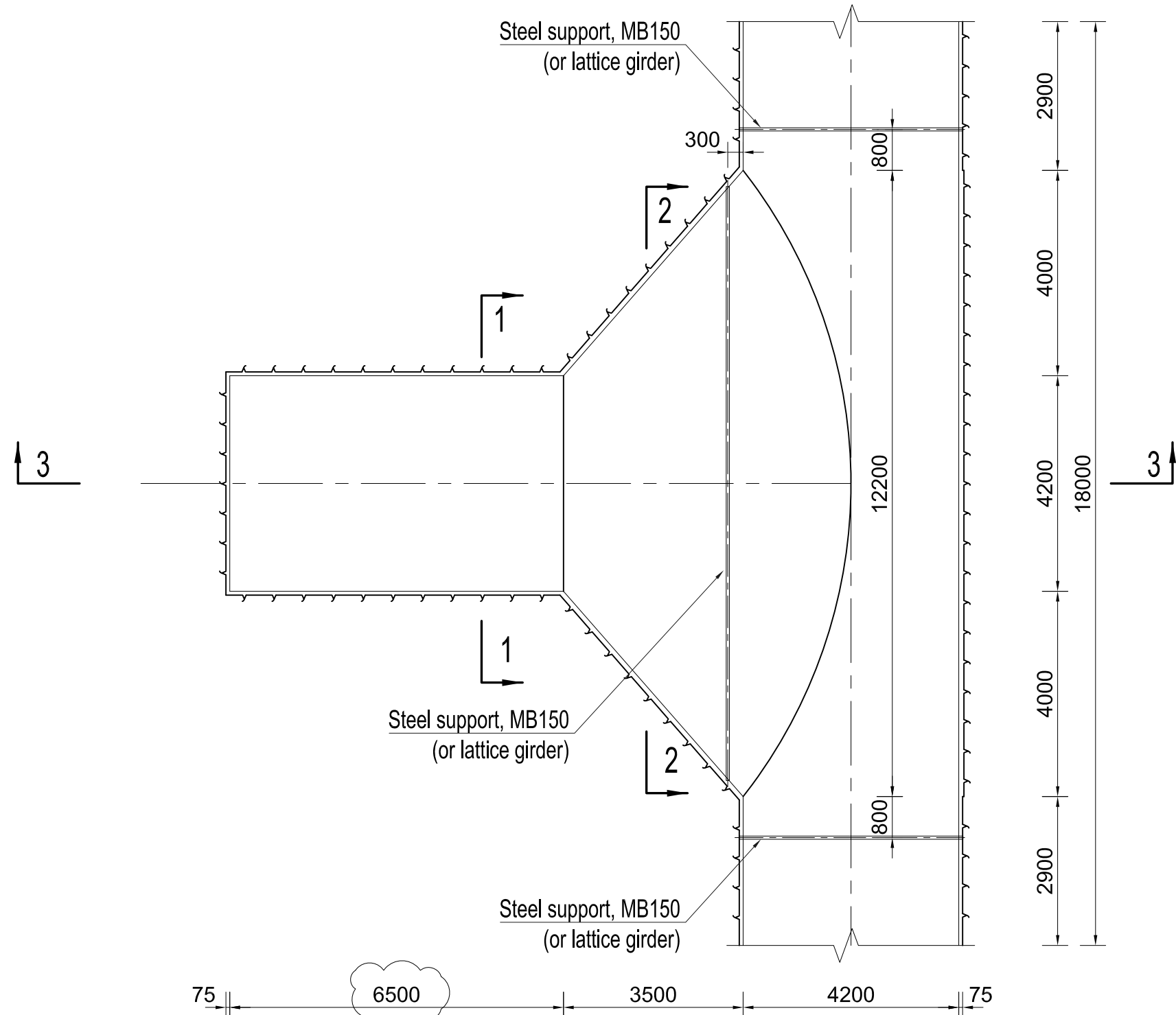
A1 (594 x 841 MM)	1
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PLAN OF TURNING ADIT (ROCK CLASS III)

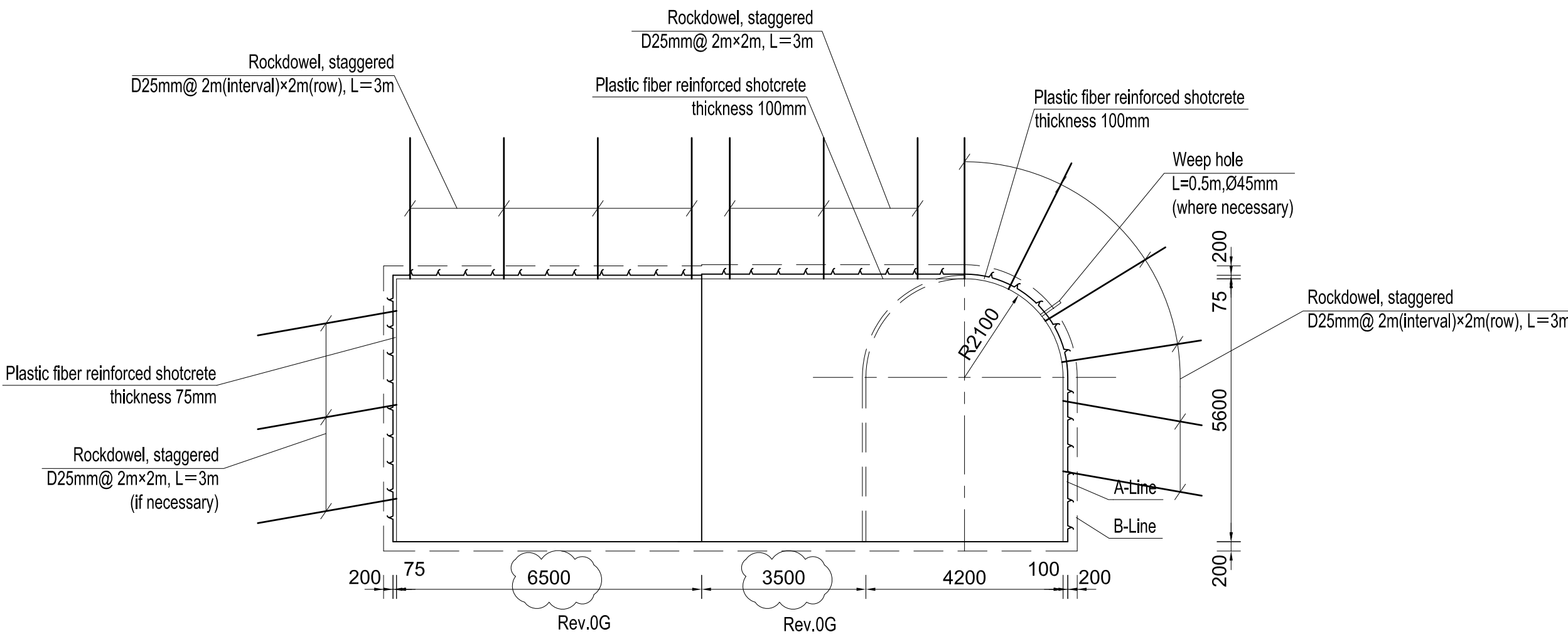
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Rev.0G

SECTION 3-3

SCALE 1:100

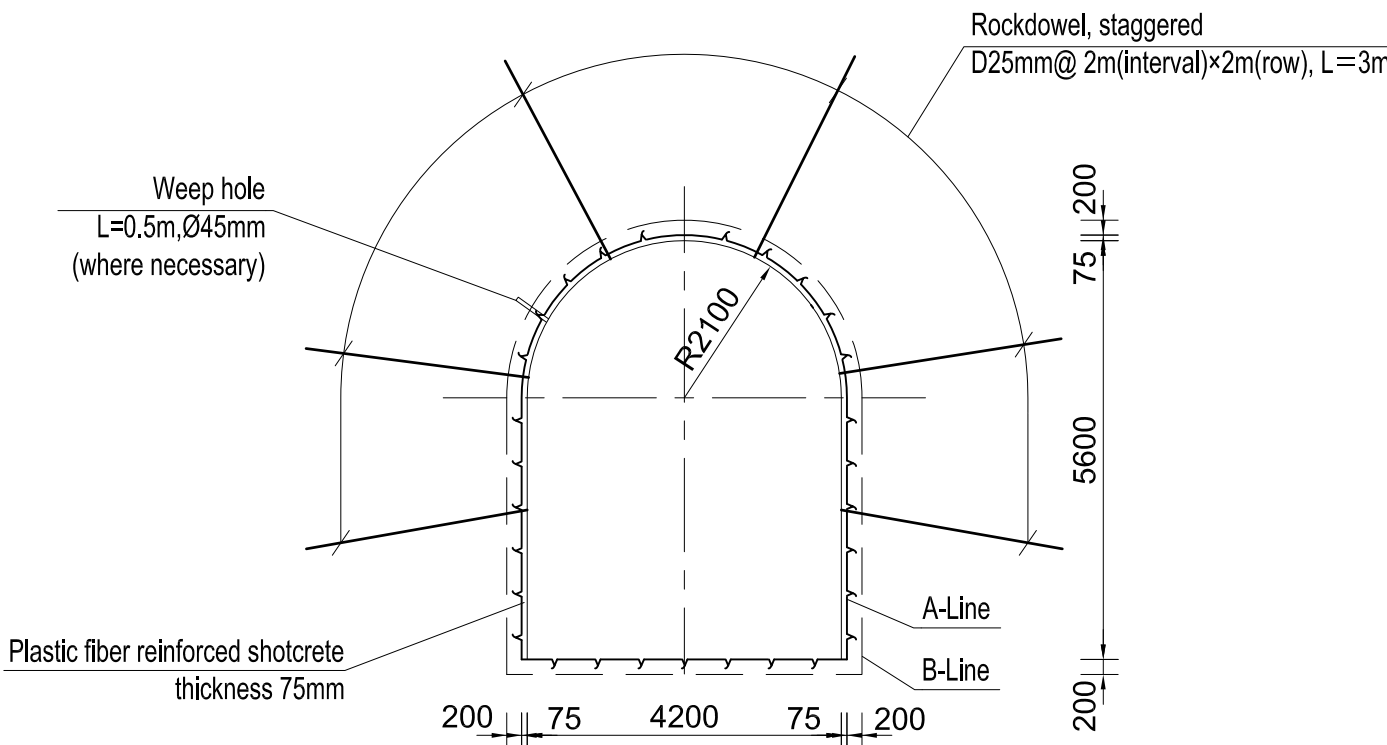


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Rev.0G

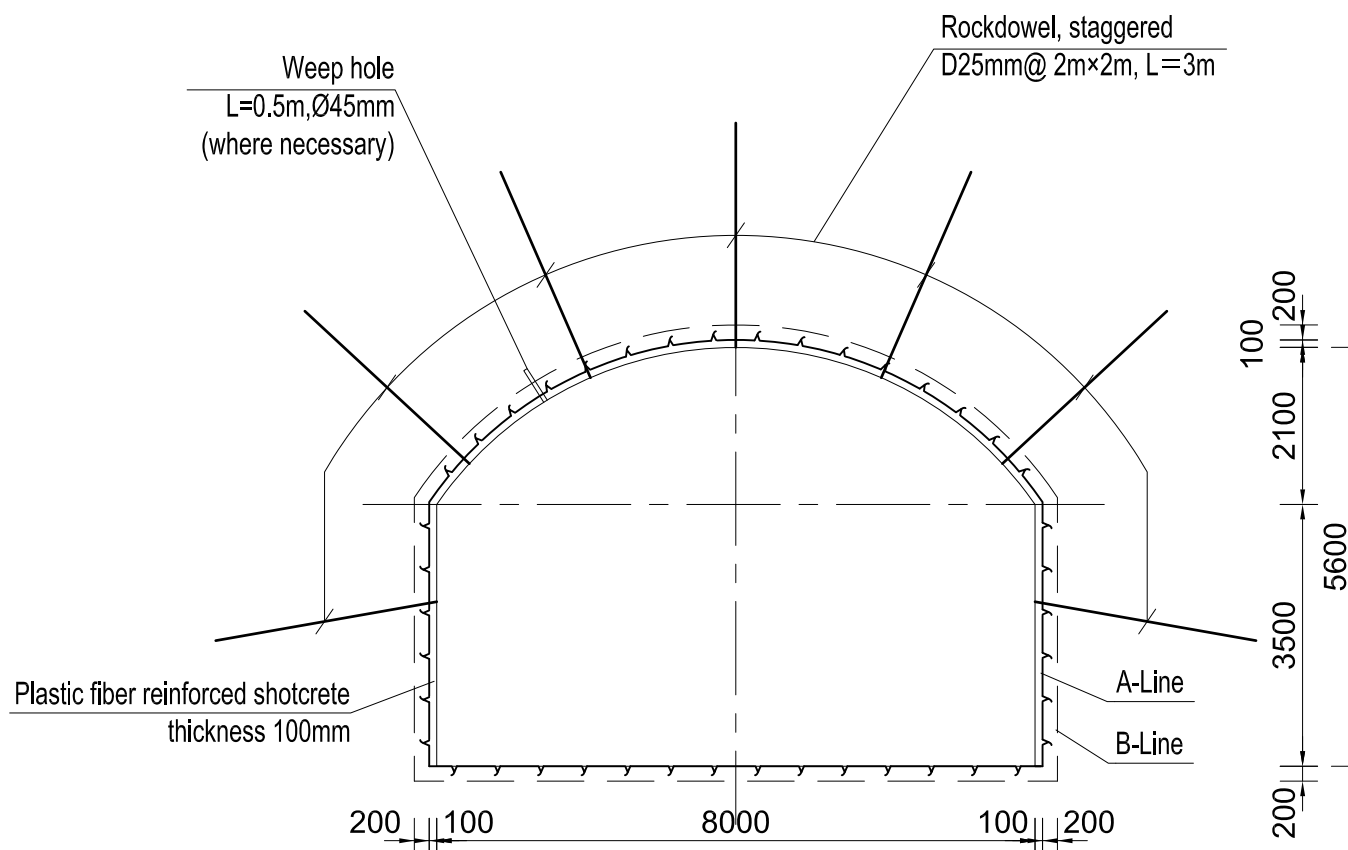
SECTION 1-1

SCALE 1:100



SECTION 2-2

SCALE 1:100



TUNNEL SUPPORT PATTERN

Support pattern	Class I	Class II	Class III	Class IV	Class V
Rock mass quality	Q>40	10<Q<40	4<Q<10	1<Q<4	Q<1
Rock dowel	Spot bolting D25, L=3m (where necessary)	Pattern bolting D25@2.5, L=3m (in tunnel roof)	Pattern bolting D25@2.0m, L=3m (alternative)	Pattern bolting D25@1.5m, L=3m (alternative)	Pattern bolting D25@1.0m, L=3m (alternative)
Shotcrete	--	T=50mm(PFRS)	T=75mm(PFRS)	T=120mm(PFRS)	T=160mm(PFRS)
Steel support	--	--	--	MB150@1.0m or (lattice girder @1m) (where necessary)	MB150@1.0m or (lattice girder @1.0m)
Supplementary support	--	--	--	Forepoling grouted dowel, D25@0.4m, L=6m (where necessary)	Forepoling grouted dowel, D25@0.4m, L=6m
Unsupported span for shotcrete(m)	--	9	2	1.5	0.5~1.0
Unsupported span for rock dowel(m)	--	6	4	3	0.5~1.0
Unsupported span for steel support(m)	--	--	--	0.5~1.0	0.5~1.0
Excavation span(m)	3	3	2	1.0~1.5	0.5~1.0
Excavation method	Blasting/Mechanically				Mechanically

1:100 0 1 2 3 4 5m

NOTE

1. The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
2. Other notes see sheet 1 & sheet 2.

REFERENCE DRAWINGS

UT1-C-150-CVL-DG-43002	Surrounding Rock Stability Calculation of Adit No.3
UT1-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UT1-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UT1-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

SYMBOL AND LEGEND

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PROJECT TITLE  
Upper Trishuli-1 HEP (216MW)

OWNER  
NWEDC  
NORAL WATER AND ENERGY  
DEVELOPMENT CO. PVT. LTD.

OWNER'S ENGINEER  
TRACTEBEL  
ENGIE  
jade  
CONSULT

CONTRACTOR  
DOOSAN Enerbility

DRAWING TITLE  
EXCAVATION AND INITIAL SUPPORT DRAWINGS  
OF ADIT NO.3 (3/5)

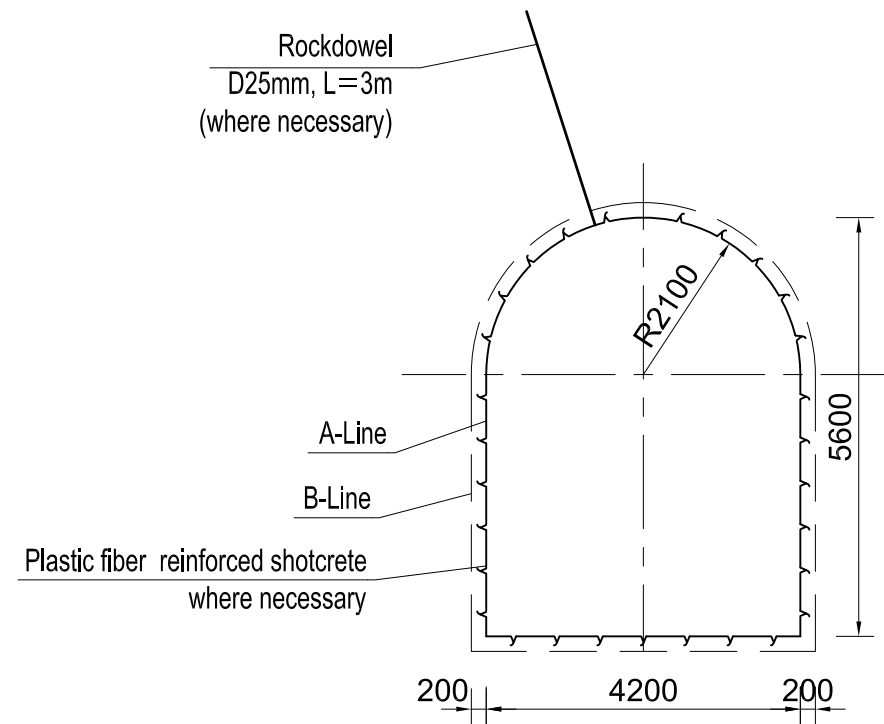
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UT1-C-150-CVL-DG-43004-2	3 OF 5	G

A1 (594 x 841 MM) 1



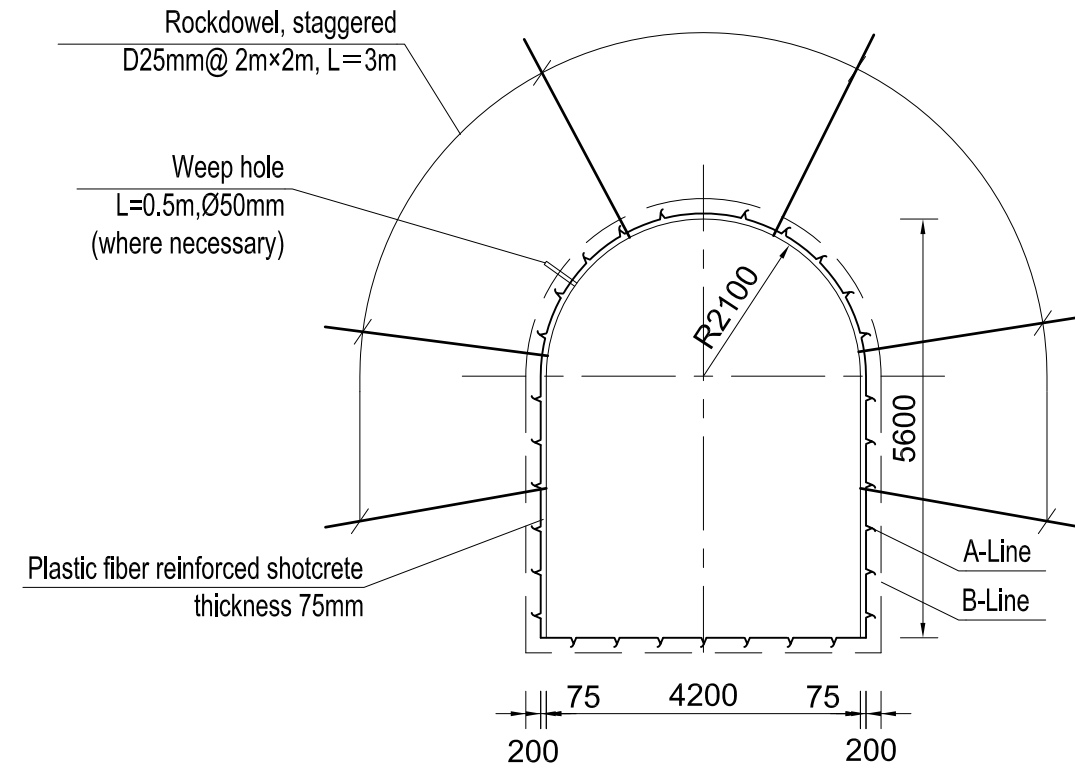
## SUPPORT TYPE A OF ROCK CLASS I

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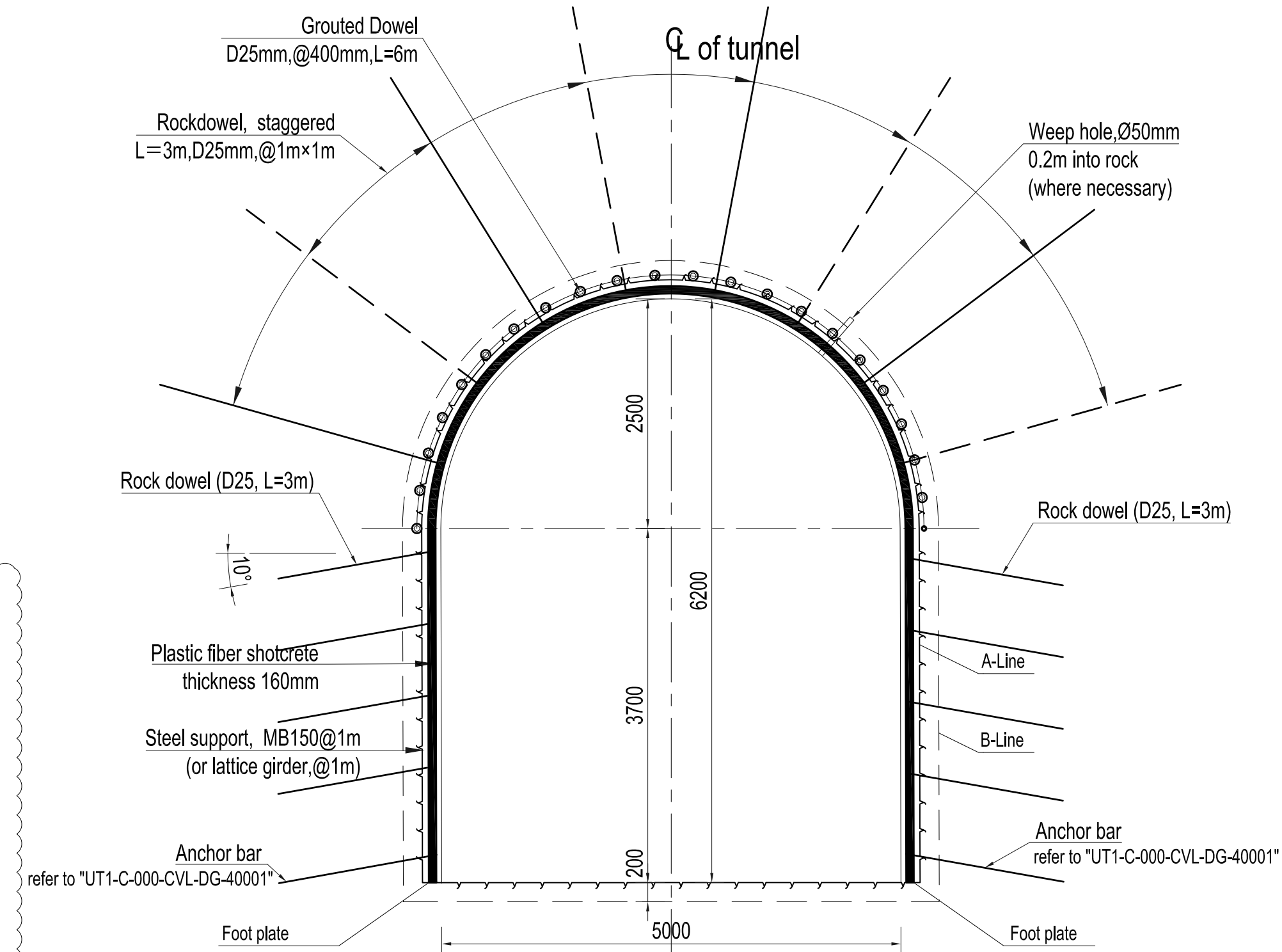
## SUPPORT TYPE C OF ROCK CLASS III

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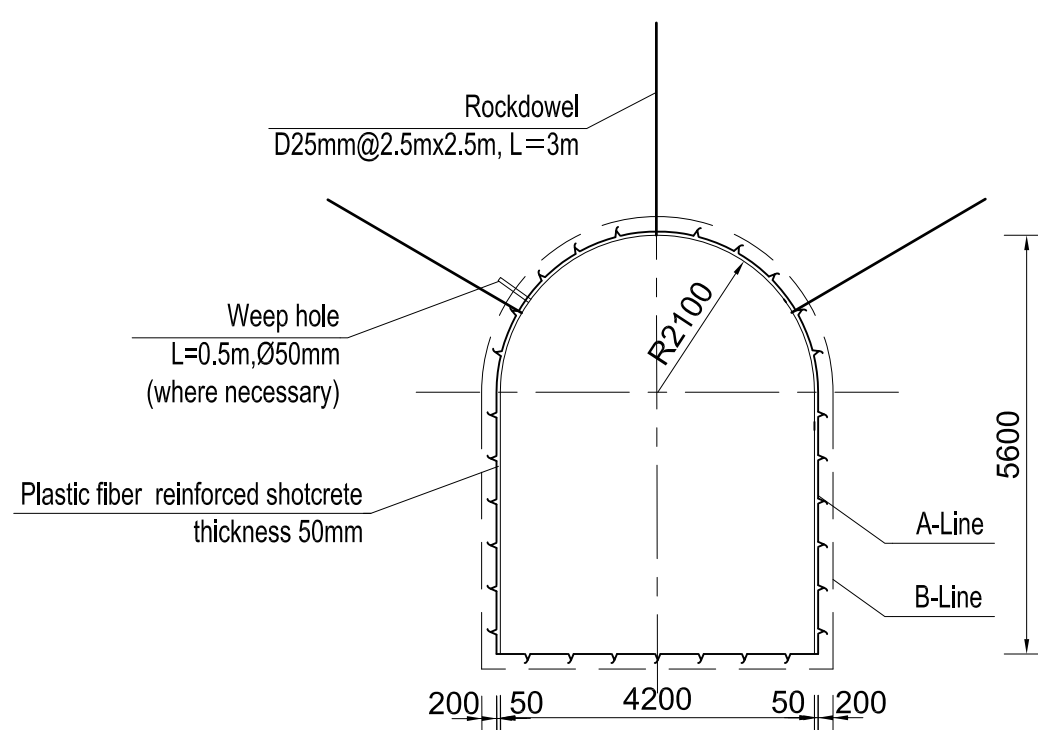
## ACROSS SECTION OF FOREPOLING

SCALE 1:100



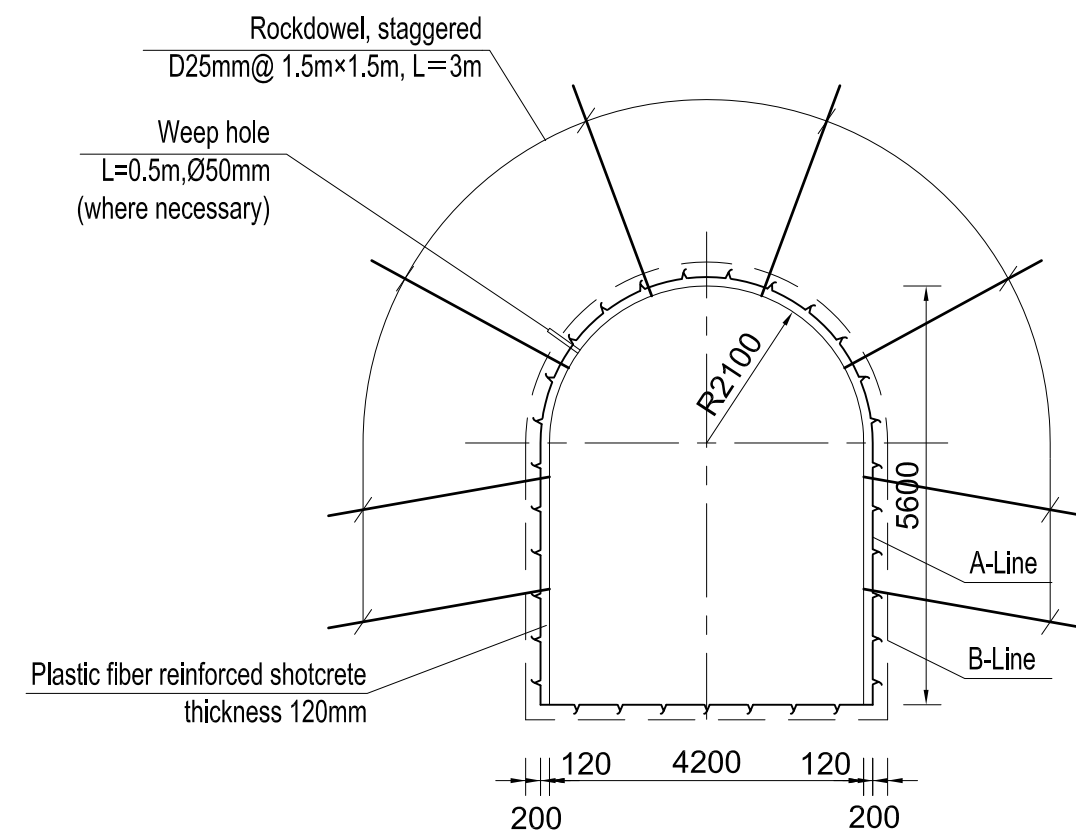
## SUPPORT TYPE B OF ROCK CLASS II

SCALE 1:100



## SUPPORT TYPE D OF ROCK CLASS IV

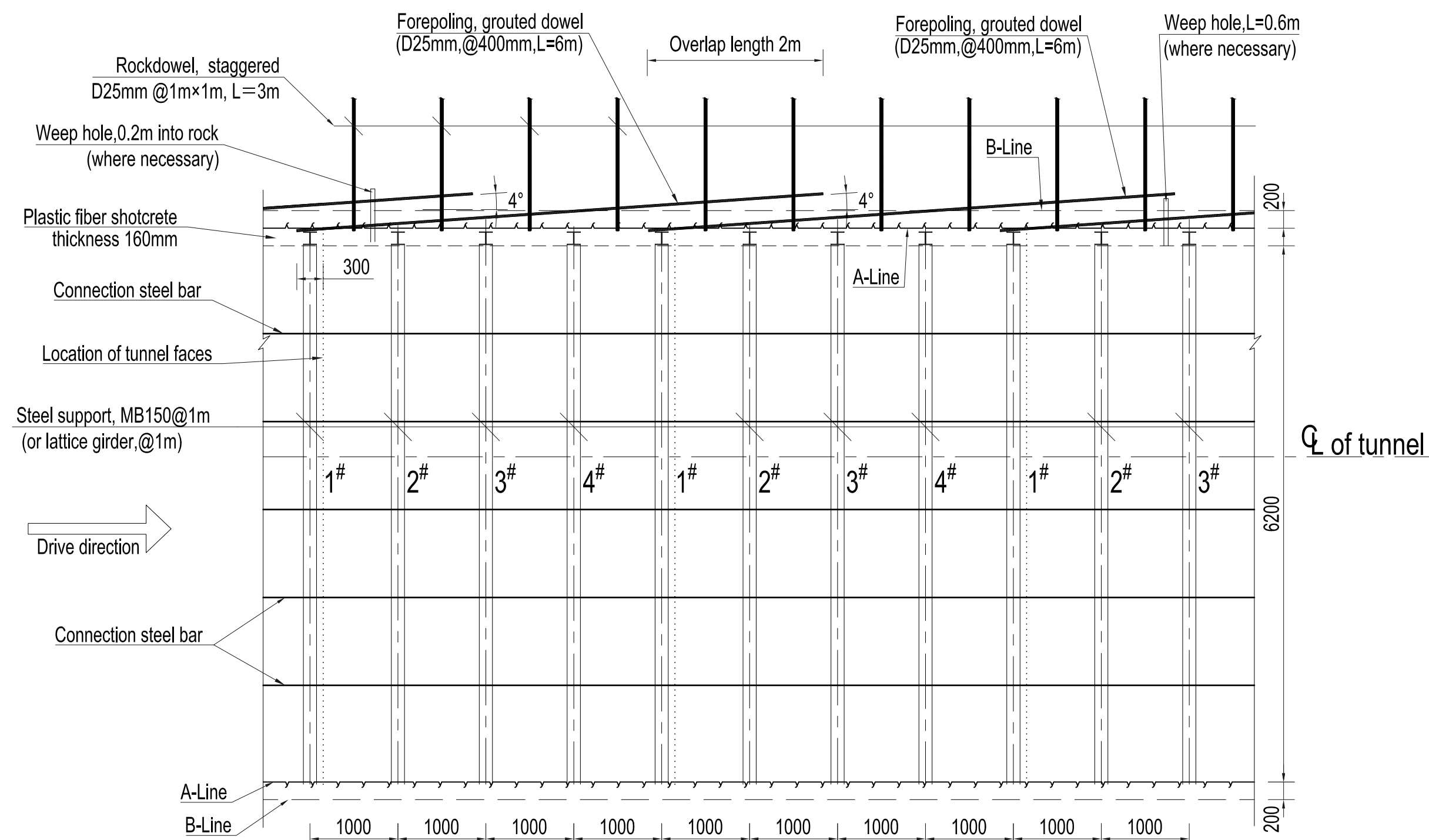
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## LONGITUDINAL PROFILE OF FOREPOLING

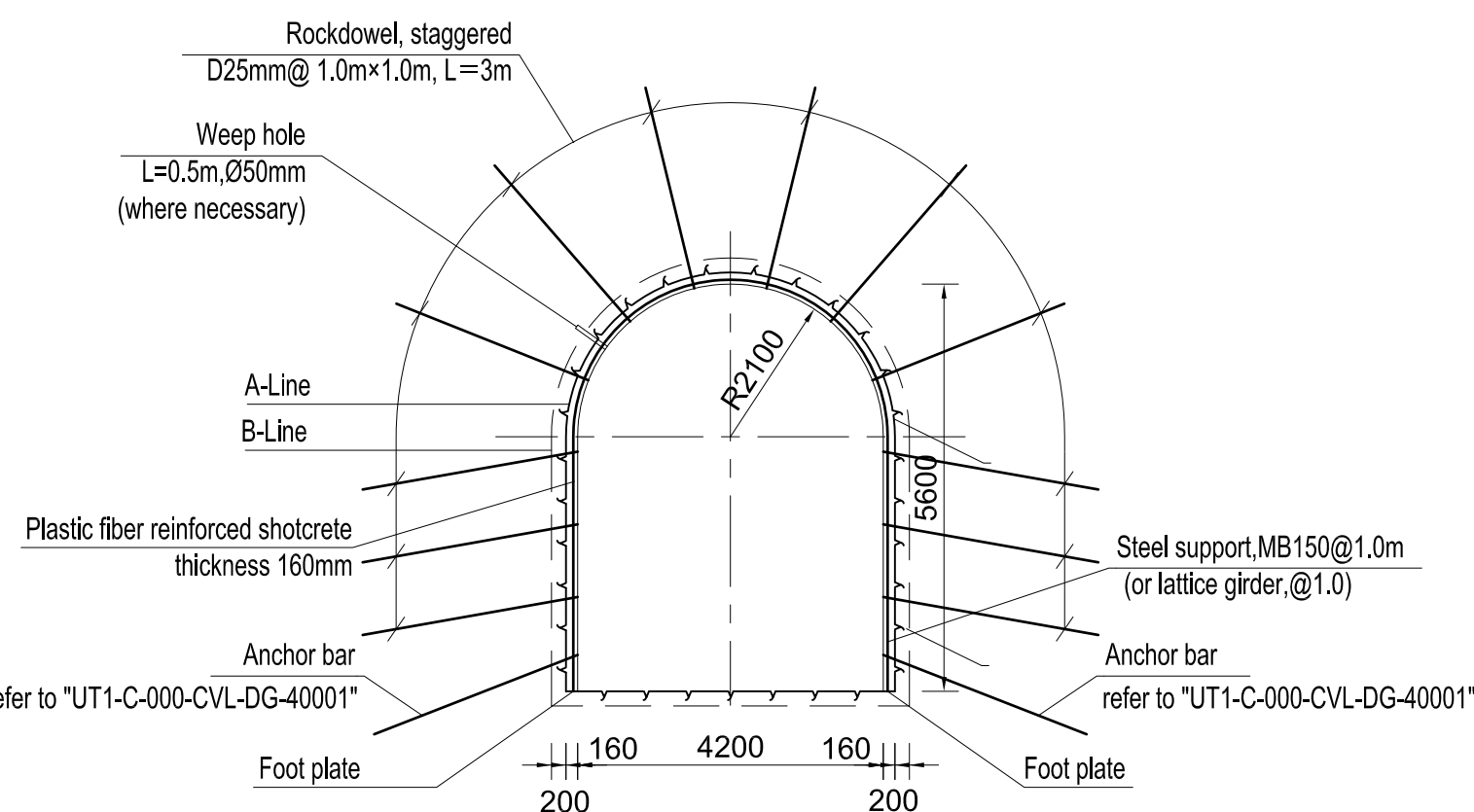
Applied to class V

SCALE 1:50



## SUPPORT TYPE E OF ROCK CLASS V

SCALE 1:100



NOTE

- The coordinates, chainages & elevations are measured in meters, all dimensions are in millimeters unless otherwise stated.
- The canopy forepoling is mainly used in the tunnel section with poor surrounding rock geology, which should be used together with dowel and steel support (or lattice girder), and the spacing of dowel should be consistent with that of steel support.
- The steel support (or lattice girder) to rock class IV is subjected to the exposed geological condition.
- The excavation profile may need to be adjusted to a "saw-tooth profile" and size of ribs/girders may also be adjusted.
- Other notes see sheet 1 & sheet 2.

REFERENCE DRAWINGS

UT1-C-150-CVL-DC-43002	Surrounding Rock Stability Calculation of Adit NO.3
UT1-C-000-CVL-DG-40001	Detailed Design Drawing of Excavation and Support for Underground Cavern
UT1-C-845-CVL-DG-70005	Layout Drawing of Monitoring for Adit No.3
UT1-C-150-CVL-DG-43009	Drawing of construction adit NO.3 plugging

SYMBOL AND LEGEND

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Upper Trishuli-1 HEP (216MW)

OWNER

**NWEDC**  
NORAL WATER AND ENERGY DEVELOPMENT CO. PVT. LTD.

OWNER'S ENGINEER

**TRACTEBEL**  
ENGIE

**jade**  
CONSULT

CONTRACTOR

**DOOSAN Enerbility**

DRAWING TITLE

EXCAVATION AND INITIAL SUPPORT DRAWINGS OF ADIT NO.3 (4/5)

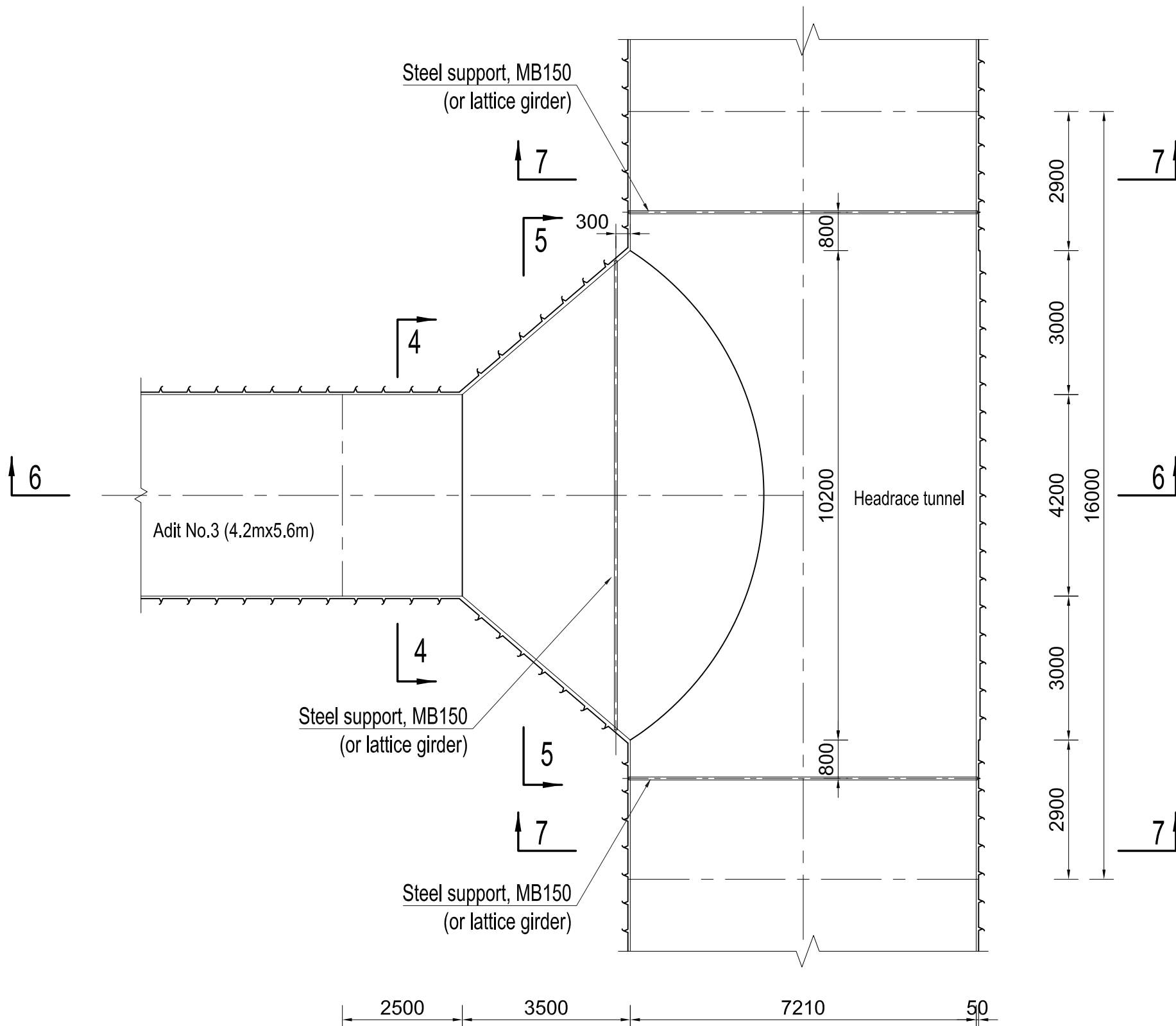
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UT1-C-150-CVL-DG-43004-4	4 OF 5	G

A1 (594 x 841 MM) 1



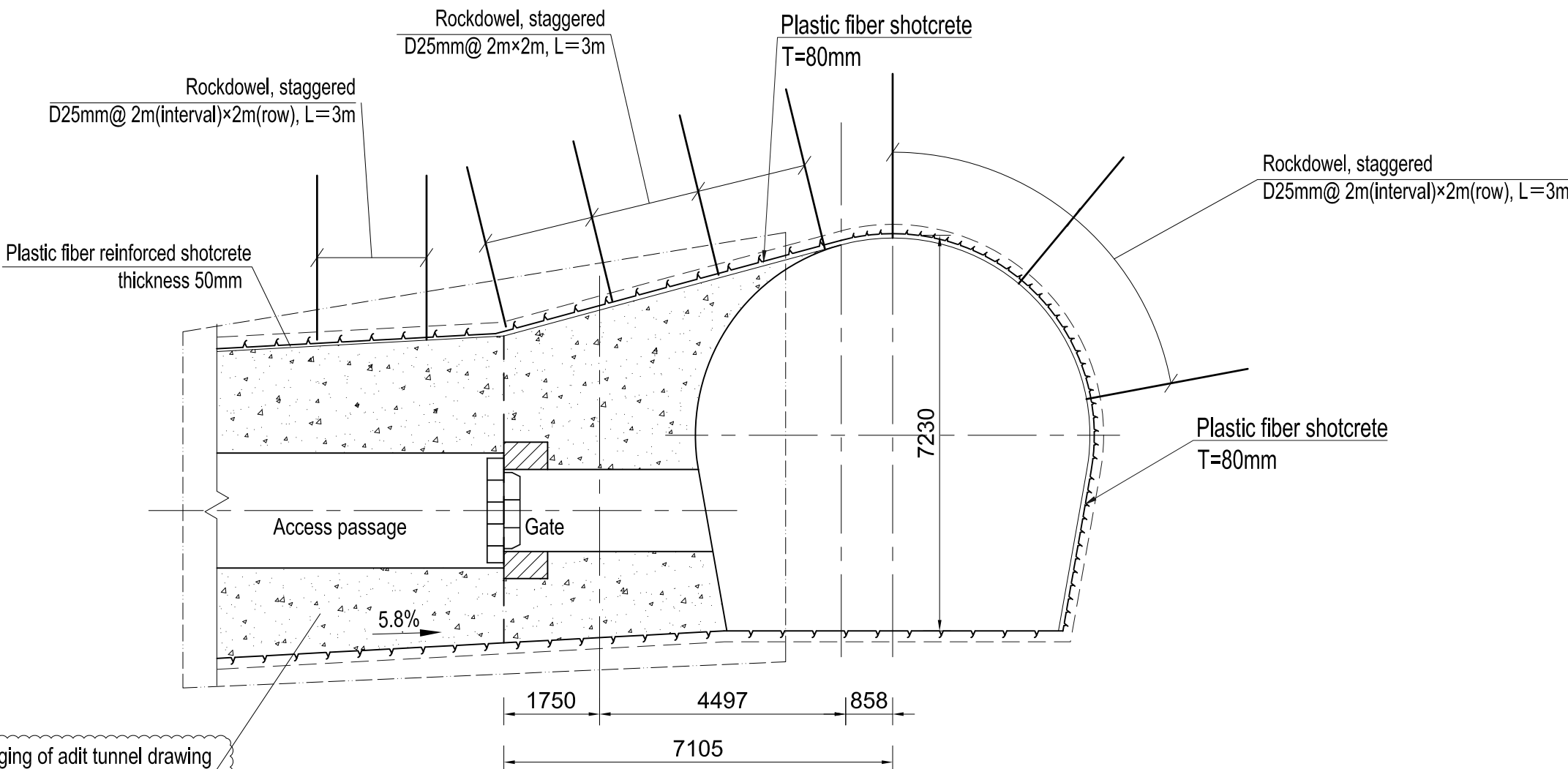
PLAN OF BRANCH OF ADIT NO.3& HEADRACE TUNNEL

SCALE 1:100



SECTION 6-6

SCALE 1:100

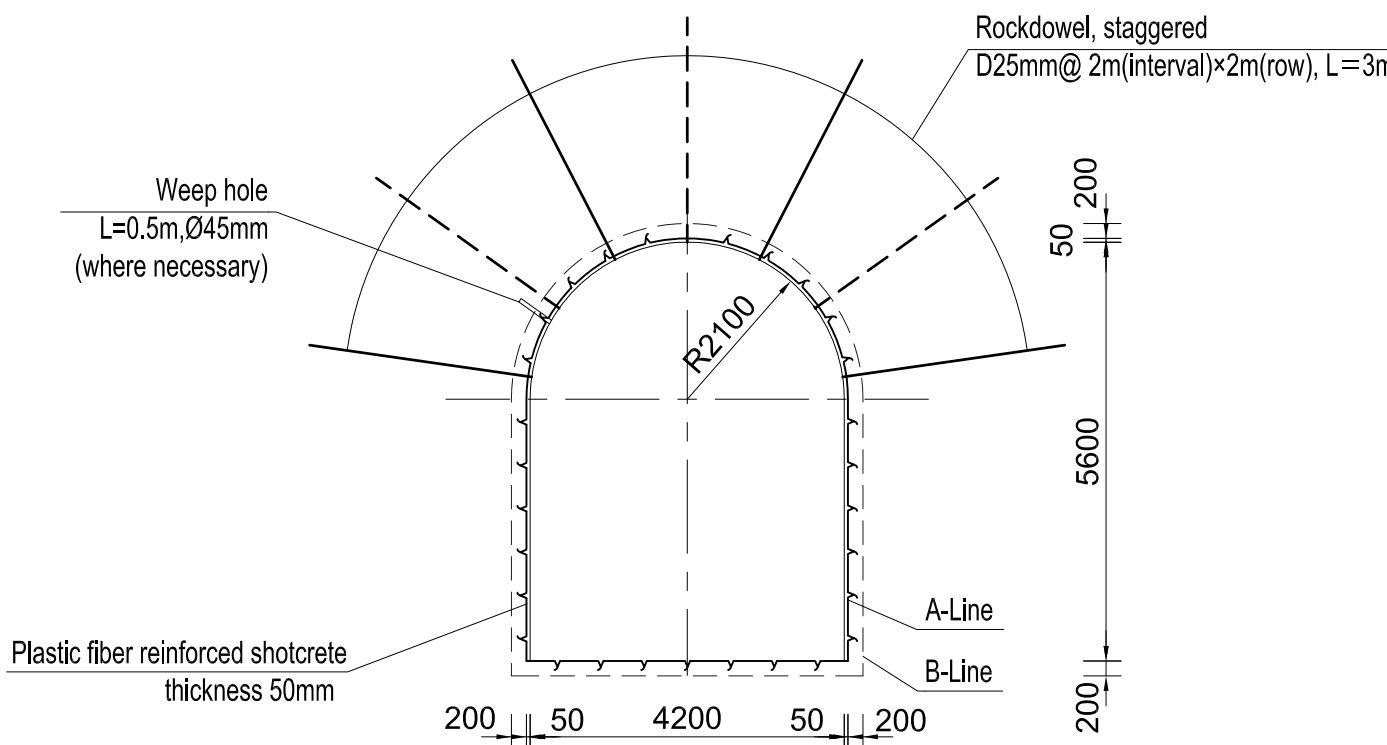


The plugging of adit tunnel drawing in the execution stage, with written approval of the OE.

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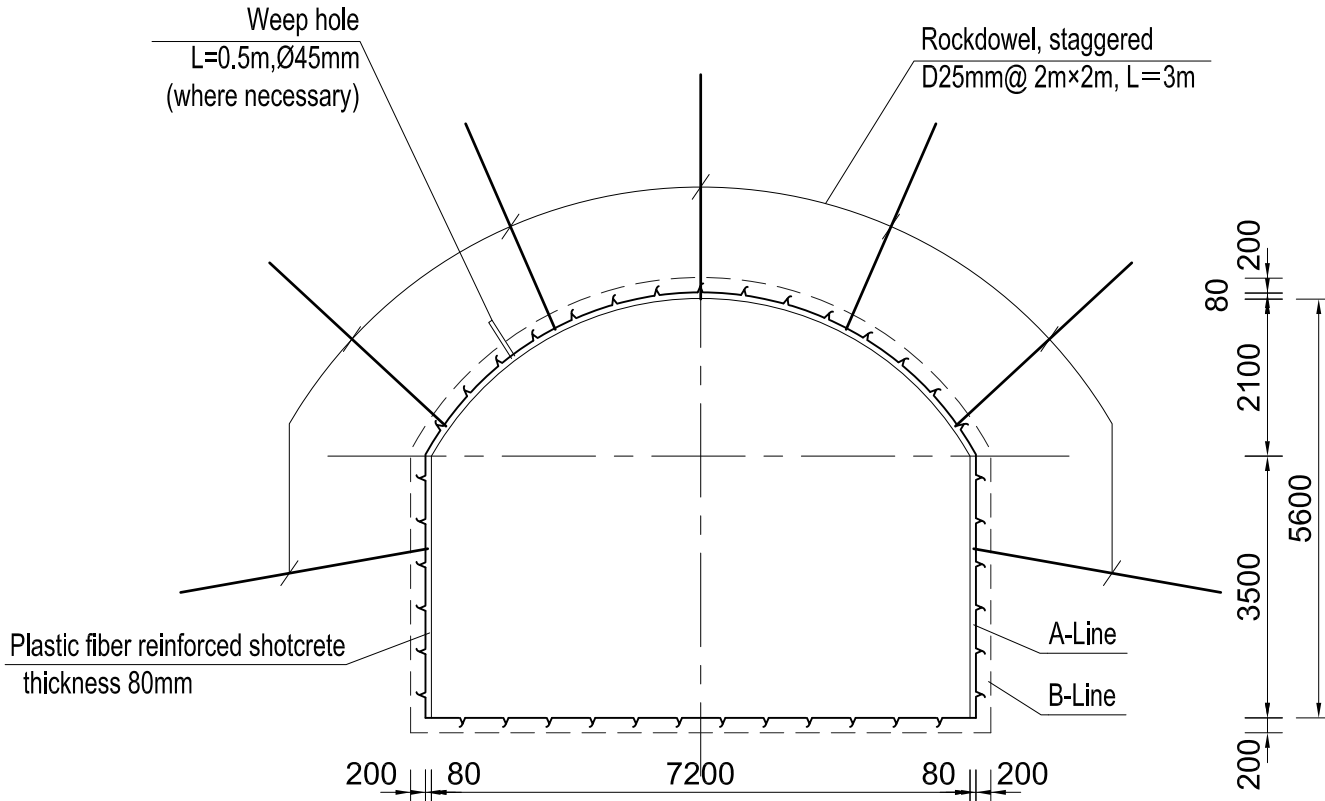
SECTION 4-4

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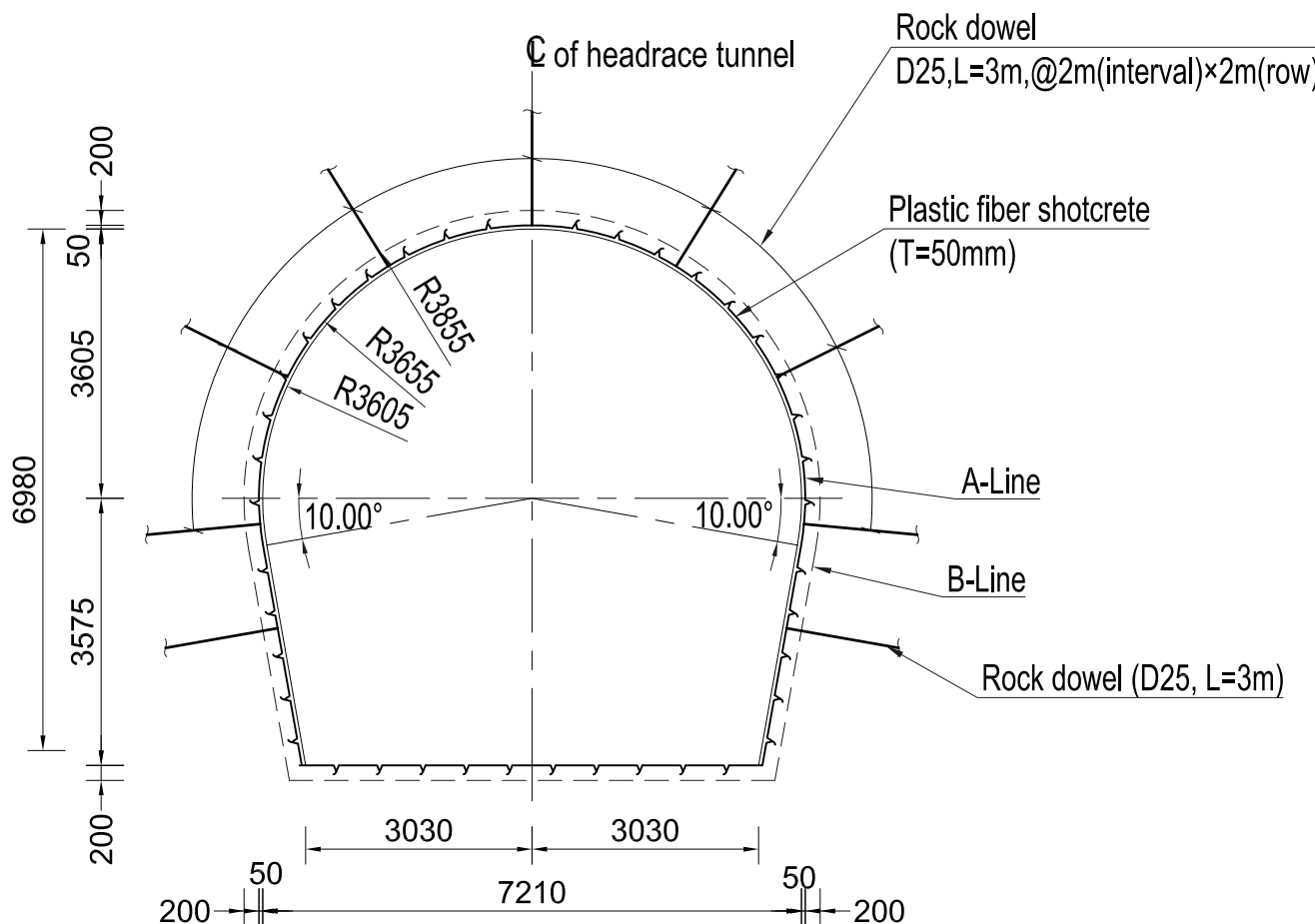
SECTION 5-5

SCALE 1:100



SECTION 7-7

SCALE 1:100



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**ENGIE**  
**JADE CONSULT**

CONTRACTOR  
**DOOSAN Enerbility**

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EXCAVATION AND INITIAL SUPPORT DRAWINGS  
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